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## SOME NEUROPTEROUS INSECTS FROM SZECHWAN, CHINA

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The neuropterous insects collected for Chicago Natural History Museum by Herbert Stevens in 1929, in the course of the Kelley-Roosevelts Asiatic Expedition to Szechwan, include a number of species of much interest; six are new and others have not been recorded since their original description. All are described or recorded herein. Types, except as otherwise indicated, are in the collection of Chicago Natural History Museum.

### Order Neuroptera Family Hemerobiidae

#### **Hemerobius vaillanti** Navas

*Hemerobius vaillanti* Navas, Broteria (Zool.), **24**, p. 25, 1927.

Two females from Tu-pa-keo, September 5, altitude 7,400 feet. Described from Kansu.

The cross-vein from medius runs very obliquely and ends at or just beyond the origin of the first radial sector.

#### **Boriomys sinica** Tjeder

*Boriomyia sinica* Tjeder, Arkiv Zool., **29A**, No. 8, p. 10, 1937.

One female, from Shuangyao to Tu-pa-keo, August 29. Described from South Kansu.

#### **Phlebiomus yunnanus** Navas

*Phlebiomus yunnanus* Navas, Rev. Acad. Cien. Zaragoza, **7**, p. 23, 1923.

Several from Tu-pa-keo, September 4 to 8, altitude 7,400 feet. Described from "Distr. de Yunnan-Fou."

The genus is hardly more than a subgenus of *Micromus*. Some of the costal cross-veins are connected; otherwise it is a *Micromus*. *Eumicromus dissimilis* Nakahara from Japan belongs to this genus.

**Allemerobius flaveolus** Banks

*Allemerobius flaveolus* Banks, Proc. U. S. Nat. Mus., 88, p. 184, 1940.

From Tu-pa-keo, September 7. Described from Mount Omei, Li Fan, and Weichow, all in Szechwan.

**Neuronema sinensis** Tjeder

*Neuronema sinensis* Tjeder, Arkiv Zool., 29A, No. 8, p. 6, 1937.

Various specimens from Shuangyao to Tu-pa-keo, August 28, 30, September 2; and Tu-pa-keo, September 4, 6, 8. Described from South Kansu.

**Family Chrysopidae****Chrysopa kiansuensis** Navas

*Chrysopa kiansuensis* Navas, Notes d'Ent. Chinoise, Mus. Heude, 1, fasc. 14, p. 3, 1934.

From Tu-pa-keo, September 4.

There are but six cubital cross-veins beyond the divisory, otherwise it appears normal. Described from Loubow, Kiangsu.

**Chrysopidia fuscata** Navas

*Chrysopidia fuscata* Navas, Rev. Russ. d'Ent., 14, p. 12, 1914.

Tu-pa-keo, September 5, 7. Described from Tali, Yunnan.

The pronotum is about as broad as long, narrowed in front; the antennae do not show the stripe on the basal joint; in one specimen the sides of the pronotum are plainly dark, in others scarcely at all; the inner gradates do not extend basally.

**Tumeochrysa immaculata** Navas

*Tumeochrysa immaculata* Navas, Broteria (Zool.), 9, p. 56, 1910.

From Shuangyao to Tu-pa-keo, August 30, and Tu-pa-keo, September 5 to 7.

There is much variation in the forking of the anal vein, and in the course of the divisory veinlet, and some also in the hind wings. In one specimen the divisory veinlet is of the *Nothochrysa* type in both wings, in another of the *Chrysopa* type, in others *Chrysopa* type in one wing, *Nodita* type in the other. In some specimens the anal vein ends in one forked and one simple vein, in others it ends in two forked veins, and in one in three forked veins. There may be two or but one branch from the third cubital cell to the margin; in one the basal vein is simple, in one the branch does not run into the end

of the anal vein as in most specimens; sometimes there is an occasional cross-vein in the costal or radial area.

The joints of the antennae are short, usually about as broad as long; thus *Tumeochrysa* belongs to the primitive group along with *Nadiva*, *Goliva*, *Anomalochrysa*, *Abachrysa*, and an undescribed genus from Australia.

In the great number of cross-veins in the middle area of the forewing *Tumeochrysa* is nearer to *Anomalochrysa*; the South American forms usually have few if any extra cross-veins, and the gradates form very long rows; but the diviory and anal veins are more irregular in some of the neotropical forms than any of the allied genera. *Chrysoplectra* Navas is a synonym of *Tumeochrysa*. *T. immaculata* was described from "Tein-Tsuen (China)."

### Family Osmylidae

#### **Thyridosmylus epiphanes** Navas

*Thyridosmylus epiphanes* Navas, Publ. Junta Cien. Nat. Barcelona, (Zool.), 11, p. 16, 1917.

From Shuangyo to Tu-pa-keo, August 29, and Tu-pa-keo, September 8; altitude 7,400 feet. The genus is hardly more than a subgenus of *Spilosmylus*. It was described from Tali, Yunnan.

#### **Osmylus posticatus** sp. nov.

*Type* from Tu-pa-keo, Szechwan, China. Altitude 7,400 feet. Male. Collected September 8, 1929.

*Paratype*.—A female, same data as the type, in the Museum of Comparative Zoology.

*Description*.—In general appearance much like the Japanese *D. tessellatus*, with dark spots over much of forewings; these spots, however, are larger in the posterior part of the wing and here some of them tend to form two oblique brown streaks reaching from the hind margin outward (in *tessellatus* when there are streaks they extend obliquely toward base). Some dark spots along costal area, longer near stigma. The outer gradate series heavily marked with brown, and often spots extending basally; inner gradates less marked with brown; most of the radial cross-veins brown and several long brown streaks in the cubital area; outer and hind margins spotted with brown, often extending inwardly; venation almost wholly dark; in hind wings no spots except in stigmal area; venation dark.

The head is yellowish, a black W-mark under bases of antennae, and a fainter brown V-mark above them, a faint brownish band

across clypeus, and some brown marks on posterior part of vertex; antennae brown. Pronotum yellowish brown in the middle, darker on the margins; meso- and metanotum dark on sides, pleura more yellowish, but with brown patches; abdomen dark brown above, but little paler beneath; legs pale yellowish, tips of all tibiae distinctly dark. Structure in general similar to other species.

The costal cross-veins, except a few near the base, are usually forked near the margin; the middle area of the forewings is very densely reticulate, some longer cells before the inner gradates; the area between the gradates rarely with cross-veins; about nine inner gradates and about fourteen outer ones; about eleven branches of the radial sector before the stigma. In hind wings, the inner row of gradates irregular, the outer row even, and of about fifteen veinlets.

Length of forewing 20.5 mm., width 7 mm.

### Order Corrodentia

#### Family Psocidae

##### **Psocus gibbosus** Sulzer

*Psocus gibbosus* Sulzer, Abgek. Gesch. d. Insecten, p. 173, 1776.

Three from Tu-pa-keo, September 3 to 5, altitude 7,400 feet between Shuangyo and Tu-pa-keo, August 30.

A species widely common in Europe and northern Asia.

### Order Plecoptera

#### Family Perlidae

##### **Kamimuria fulvescens** Klapalek

*Kamimuria fulvescens* Klapalek, Casopis, Spol. Ent., 9, pp. 89, 105, 1912.

From Ta-tsien-lu, June 19. Described from Mow-Pin and Chen-si, China.

##### **Kamimuria latior** Klapalek

*Kamimuria latior* Klapalek, Casopis, Spol. Ent., 9, pp. 91, 105, 1912.

Between Ta-tsien-lu and Uulong-Kong, June 11, 13, and below Che-to, June 3. Described from between Sogon Gomba and river I-Tschu, China.

### Order Trichoptera

#### Family Limnephilidae

##### **Halesinus tenuicornis** Ulmer

*Halesinus tenuicornis* Ulmer, Notes Leyden Mus., 29, p. 4, 1907.

From Tu-pa-keo, September 3, 4, 6, altitude 7,400 feet, and between Shuangyo and Tu-pa-keo, August 30.

***Pseudostenophylax amplus* McLachlan**

*Pseudostenophylax amplus* McLachlan, Ann. Mag. Nat. Hist., (6), 13, p. 421, 1894.

From Uulong-Kong, June 27, altitude 11,500 to 13,000 feet. Described from "Tachienlu, Szetschwan."

***Pseudostenophylax grahami* Martynov**

*Pseudostenophylax grahami* Martynov, Proc. U. S. Nat. Mus., 79, p. 12, 1931.

From Tu-pa-keo, September 4, altitude 7,400 feet. Described from Mount Omei and Yellow Dragon Temple, Szechwan.

***Pseudostenophylax brevis* Banks**

*Pseudostenophylax brevis* Banks, Proc. U. S. Nat. Mus., 88, p. 216, 1940.

From Uulong, south of Ta-tsien-lu, June 26, altitude 11,200 feet. Described from Washan, Szechwan.

***Evanophanes insignis* Banks**

*Evanophanes insignis* Banks, Proc. U. S. Nat. Mus., 88, p. 211, 1940.

Three from Tu-pa-keo, September 3, 7, altitude 7,400 feet. Described from Washan, Szechwan. Previously known from the unique type in the United States National Museum.

**Family Rhyacophilidae**

***Himalopsyche alticola* Banks**

*Himalopsyche alticola* Banks, Proc. U. S. Nat. Mus., 88, p. 200, 1940.

From Tu-pa-keo, September 3, 4, 8, altitude 7,400 feet, and on march from Shuangyo to Tu-pa-keo, August 29. Described from several localities in Szechwan.

***Himalopsyche placida* sp. nov. Figure 9.**

*Holotype* from Tu-pa-keo, Szechwan, China. Altitude 7,400 feet. Male. Collected September 7, 1929.

*Paratype*.—A male, collected between Shuangyo and Tu-pa-keo, Szechwan, August 29, 1939; in the Museum of Comparative Zoology.

*Description*.—Head yellowish brown, thorax brown, abdomen brown above, yellowish below; palpi pale, antennae yellowish, each joint with a brown band above; legs yellowish, front and middle tibiae with a dark band near middle and a broader dark band before

tip, basitarsus dark at tip, hind legs unmarked; male genitalia yellowish.

Forewings much like other species, very pale, and reticulate or marmorate with brown, the brown spots in costal area very distinct, and in middle of wings the brown reticulation distinct and not so restricted to near veins as in *H. alticola*; the pale veins interrupted by brown streaks; hind wings hyaline, faintly brownish in front and at tip, veins yellowish. Structure and venation similar to *H. alticola*.

Male appendages similar to those of *H. navasi* and *H. excisa*. The broad basal part of the superior appendages is much longer than

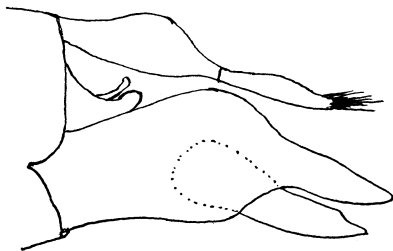


FIG. 9. *Himalopsyche placida*, genitalia from side.

in *navasi*; they are wide apart at base, but come together in a broad curve above the widest part of the inferior appendages; from thence is a very slender process tipped with spines. The inferior appendages are much broader in the middle than in *navasi*. The absence of wing-markings readily separates this species from *navasi*. It differs from *excisa* in that the lower part of the inferior appendages is more slender, and the superior appendages are not nearly as broad, nor as long. Also, it has a slender apical part, lacking in *excisa*.

Length of forewing 15–16 mm., width 5–5.5 mm.

### ***Himalopsyche hageni* Banks**

*Himalopsyche hageni* Banks, Proc. U. S. Nat. Mus., 88, p. 197, 1940.

Between Shuangyo and Tu-pa-keo, August 28, altitude 8,400 to 10,000 feet. Described from Ta-t sien-lu, Szechwan.

### ***Rhyacophila sinensis* Martynov**

*Rhyacophila sinensis* Martynov, Proc. U. S. Nat. Mus., 79, p. 1, 1931.

Between Shuangyo and Tu-pa-keo, August 29. Described from Songpan, Szechwan.

**Rhyacophila marcida** sp. nov. Figure 10.

*Holotype* from Tu-pa-keo, Szechwan, China. Altitude 7,400 feet. Male. Collected September 6, 1929.

*Allotype*.—A female, labeled "Probably Szechuan 1929, H. Stevens."

*Paratype*.—A female, same data as the allotype; in the Museum of Comparative Zoology.

*Description*.—Head and thorax black, abdomen dark above, paler beneath; legs beyond the dark coxae very pale, tarsi darker; basal joint of antennae black, pale beyond, each joint with a brown

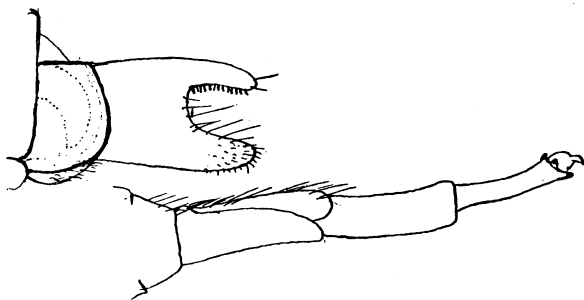


FIG. 10. *Rhyacophila marcida*, clasper from side, and penis.

band across the middle; male genitalia dull yellowish; wings nearly black, a white mark on forking of medius, and white spots on outer margin, one in each space. Many long, curved black bristles on face, vertex, pronotum, and mesonotum, shorter but denser on basal palpal joints, last joint of palpus a little longer than preceding joints.

In forewings, fork two extends back a little before fork one, forks three, four, and five are subequal in length, fork four is wider at tip than others; medius forks a little before forking of radial sector; in hind wings fork two is also before fork one. The lower appendage of the male is quite broad and rather deeply divided, the lower part almost twice as broad as the upper; the under side of the upper part has a row of short stout spines or teeth, and the sixth sternite has a small apical tooth in the middle. In the female, the terminal segments are slender and extensile, the last with a bilobed tip.

Length of forewing: male 8 mm., female 9.5 mm.

**Glossosoma aequalis** Banks

*Glossosoma aequalis* Banks, Proc. U. S. Nat. Mus., 88, p. 202, 1940.

Many specimens from Tu-pa-keo, September 4, 7, altitude 7,400 feet, and on march between Shuangyo and Tu-pa-keo, altitude 8,400 to 10,000 feet, August 31. Described from Beh Luh Din, Wenchuan, and Kuanshien, all in Szechwan.

**Glossosoma minutum** sp. nov. Figure 11.

*Holotype* from Tu-pa-keo, Szechwan, China. Altitude 7,400 feet. Male. Collected September 4, 1929.



FIG. 11. *Glossosoma minutum*. a, venation near discal cell; b, tip of abdomen from side, and base of forewings of male.

*Allotype*.—A female, same data as the type.

*Paratypes*.—Two specimens, same data as the holotype; one in the Museum of Comparative Zoology.

*Description*.—Body brown, abdomen above black; legs yellowish, spurs nearly black; antennae yellowish, basal joint darker; palpi dark brown; wings yellowish brown. Many stiff, curved black bristles on head, basal joints of palpi, and pronotum.

Venation much as in other species; the discal cell moderately broad, fork two extending back nearly halfway on cell, fork three almost as far back as fork two, fork four short and quite broad, fork five much longer and with only a very short pedicel; the area at anal base of forewing very slender, almost twice as slender as in *G. anale*, the surface covered with minute gray scale-like hair.

The tip of the abdomen of the male is greatly enlarged and rounded above and behind, almost bulbous; below is a long process enlarged at middle and forked, the upper prong hardly one-half of the lower and more pointed.

In the female the discal cell is more slender, the midfemur rather long and thick; the tibia much shorter and broader; the abdomen is dark at tip and with extensile tube.

Length of forewing 4.5 mm.



Family **Hydropsychidae****Stenopsyche navasi** Ulmer

*Stenopsyche navasi* Ulmer, Arch. Naturg., **91**, Abt. 1, Heft 5, p. 37, 1925.

Between Uulong-Kong and Ving-Kuan-chiai, July 8, and between Shuangyo and Tu-pa-keo, August 29. Described from Tient Tsuen, Shantung Province, China.

**Philopotamus sinensis** Banks

*Philopotamus sinensis* Banks, Proc. U. S. Nat. Mus., **88**, p. 209, 1940.

Many specimens from Tu-pa-keo, September 4, 6, 7, altitude 7,400 feet, and on march from Shuangyo to Tu-pa-keo, August 30. Described from Wenchuan, Jedo Pass, and O-Er, all in Szechwan.

**Hydropsyche rhomboana** Martynov

*Hydropsyche rhomboana* Martynov, Ann. Mus. Zool. St. Petersburg, **14**, p. 302, 1909.

From Tu-pa-keo, September 4, 7. Described from eastern Tibet, but since recorded from Szechwan.

**Hydropsyche waltoni** Martynov

*Hydropsyche waltoni* Martynov, Proc. Zool. Soc. Lond., **1930**, p. 78, 1930.

On march from Shuangyo to Tu-pa-keo, August 28, 29. The specimens at hand agree well with a paratype in the Museum of Comparative Zoology. Described from Tibet.

**Plectrocnemia tortosa** sp. nov. Figure 12.

*Holotype* from Tu-pa-keo, Szechwan. Altitude 7,400 feet. Male. Collected September 6, 1929.

*Allotype*.—A female, same data as the holotype.

*Paratypes*.—Three males and two females, same locality as the holotype, September 4–6; one female, labeled "Probably Szechuan 1929, Kelley-Roosevelts Exped., H. Stevens." A female and two male paratypes in the Museum of Comparative Zoology.

*Description*.—Body brown to yellowish brown; palpi brownish; antennae pale yellowish, banded with brown, and more brown toward tips; legs dull yellowish; forewings dull yellowish to hyaline, with some brown marks, in male mostly in costal and nearby areas, in anal area, and along cubital vein; in female marked all over with brown, marmorate, with larger spots at end of anal vein and another a little before and above it; hair dull yellowish, veins brown; hind

wings scarcely marked except just beyond the separation of subcosta and radius.

In forewings the discal cell is longer than its pedicel, longer than in *P. conspersa*, fork one about equal to its pedicel, fork two reaching back a little on discal cell, fork three with a short pedicel, fork four reaching back a little on median cell, fork five plainly wider near base than elsewhere, wider than tip of median cell, and then

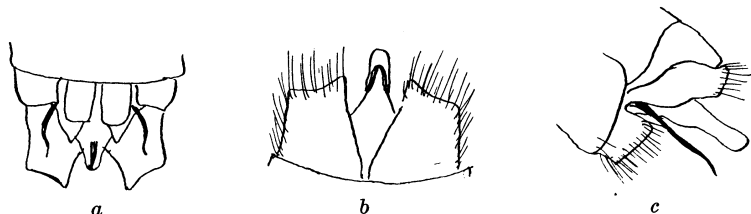


FIG. 12. *Plectrocnemia tortosa*. Genitalia: a, from above; b, from below; c, from side.

much narrowed before end. In hind wing fork five is also much widened near the base.

In the male genitalia there are two short projections above near the middle, and below them a pointed tip; from each side arises a slender, slightly sinuous, chitinous rod; the interior plates are very prominent, broad, the inner tip projecting, the end a little concave, and oblique; the penis is plain and rounded at the tip, but plainly enlarged a little before the tip.

Length of forewing: male 8–9 mm., female 12 mm.

### **Arctopsyche difformis** sp. nov. Figure 13.

*Holotype* from between Shuangyo and Tu-pa-keo, Szechwan. Male. Collected September 2, 1929.

*Allotype*.—A female from Tu-pa-keo, Szechwan. Altitude 7,400 feet. Collected September 4, 1929.

*Paratypes*.—Five males, one female, and one specimen of undetermined sex, same locality as the allotype, September 4–7; one female, same locality as the holotype, August 29. A female and two male paratypes in the Museum of Comparative Zoology.

*Description*.—Head brown; body brown to yellowish brown; antennae dull yellowish, basal joint brown, some joints near base dark at tip; legs yellowish; forewings densely marmorate with brown, some large pale spots in costal and subcostal areas and similar spots

along outer margin, one between each pair of veins; a dark spot on the ends of the veins; hind wings unmarked. Head with the warts as in *A. lagodensis*, maxillary palpi a little longer than in that species. The venation similar to *lagodensis* except that the discal cell is much longer, fully three times as long as broad, the median cell also longer than in other species. The male genitalia very different from *lagodensis*, more like *Diplectrona*. The sheath of penis a broad flat



FIG. 13. *Arctopsyche difformis*. Genitalia: *a*, from below; *b*, from side; *c*, from above.

piece, nearly hyaline; the claspers indistinctly two-pointed, the outer part slender, curved and sharp-pointed. The superior plate short and broad, well rounded out, with two short processes at middle of margin; from below them project two short, curved, spine-like processes. The penis, seen from the side, is greatly enlarged below shortly before the tip.

Length of forewing: male 9–10 mm., female 12 mm.